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DISEASES *of the* CHEST

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THE impression made by the first issue of DISEASES OF THE CHEST far exceeded our expectations. Ten thousand copies were mailed to representative physicians throughout the United States. Their voluntary letters of appreciation have been more than gratifying. I am giving below quotations from some of these letters, which exemplify the expressions of all our friends who have written.

Dr. Edw. S. Bennett, Los Angeles, California, says:

"Please accept my sincere and hearty congratulations on Volume I, Number 1, of DISEASES OF THE CHEST. All articles were timely, concise and to the point. There is a great need for a journal in the right price range and at the proper size, dealing with the diagnosis, treatment, management and mis-management of Diseases of the Lungs, that will reach, and be read by, the General Practitioner. If the subsequent issues of DISEASES OF THE CHEST maintain the standard as shown in the first issue, you have started on its way to success a medical journal, which I am sure will be greatly appreciated.

"Here is wishing you and the other editors all the support and commendation you deserve."

Dr. Champneys H. Holmes, of Atlanta, Georgia, writes:

"I received the first issue of DISEASES OF THE CHEST and on this same mail am sending in my subscription for same. I am very happy to see the advent of this publication as I believe it will serve a most useful and timely purpose.

"I am one of the few men in this section who limits his work strictly to diseases of the chest and naturally this publication will hold a strong interest for me.

Foreword

BY

C. M. HENDRICKS, M. D.

El Paso, Texas

wishes for the success of this undertaking, I remain."

These expressions will go far in encouraging us to maintain DISEASES OF THE CHEST on a high plane and make it more interesting and instructive to all concerned.

The Federation of American Sanatoria feels that we have a great work to do and if our efforts meet with continued success we will be well repaid for them.

We again invite our readers to make use of the Queries and Answers column. Send us any problems concerning diseases of the chest and we will endeavor to explain any question within our power.

We are convinced that the physician in the field has numerous problems that arise in his dealings with tuberculous patients; especially at this time, during

the economic stress with all its complexities. It is the hope that the Federation of American Sanatoria will be especially helpful now, as at no time in the past decade has tuberculosis assumed a more menacing aspect, especially in the rural communities. These rural communities are largely infected with the disease, this being attributed to the many unsegregated open cases and the large number of persons sleeping in one room without the necessities for cleanliness, and with little food.

So to all physicians interested in tuberculosis, the Federation of American Sanatoria offers its services thru DISEASES OF THE CHEST.

WE WANT TO HELP.



To meet the problems that the general practitioner finds in dealing with his tuberculous patients and those that confront him in the early diagnosis and treatment of these cases, the Federation of American Sanatoria hopes that this Journal will be of material aid. The technical articles presented within its pages are contributed by men who have devoted their lives to the study of the disease.





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C. M. HENDRICKS, EDITOR-IN-CHIEF

(A MONTHLY PUBLICATION)

"The most important factor in diagnosis in the majority of cases of pulmonary tuberculosis is keeping the disease in mind."

Lawrason Brown, M. D.

Editorial Comment

The Prevention of Tuberculosis in Children AUTHORITIES AGREE that children are born free from tuberculosis and that infection, if it takes

place at all, occurs after the child is born. It is likewise known that infants and young children are very easily infected by close association with active cases of tuberculosis. To prevent infection, then, in the very young, the first principle to follow would obviously be, to keep the child away from persons who have active tuberculosis. This is simple enough in an ordinary home where there are no tuberculous individuals, while the child is still young. However, as the child grows up and is not kept so closely at home, is allowed to play about, visit in other people's homes and later on enter public or private schools, from this time on exposure to infection sooner or later takes place.

The likelihood of infection at this time will depend upon the condition of the child. If a child has been reared in hygienic surroundings at home, has been fed pasteurized or certified milk and has been reared according to the instructions of children's specialists, the condition of the child will then be such as will protect it from ordinary exposure.

Children today receive much better care during early life than ever before; specialists are teaching the mother how to care for and feed her children. Tuberculosis occurring in children whose parents do not have tuberculosis is becoming more rare each year.

Many of the diseases of children, such as measles, whooping cough and scarlet fever, have been regarded too lightly by everyone in all walks of life. Many cases of tuberculosis in children follow one of these diseases; therefore, we should regard them as pre-disposing causes of tuberculosis and such cases should be followed up very closely by the medical attendant.

Tuberculosis in children occurs most frequently in families where tuberculosis already exists and this presents one of the gravest public health problems. In some cities and communities there is an ordinance which provides as follows:

When a child is born in a home where there is a tuberculous individual, either the child or the individual is taken from the home. From a scientific as well as a true humanitarian standpoint this is an ideal procedure; however, it often brings a great deal of grief to the home. Personally, I do not feel that any father or mother could seriously object if they were made to understand that they are sparing their child the danger of infection. It may be of interest to know that this ordinance is rigidly enforced in the city of Chicago.

In communities where this ordinance is not enforced or does not exist, when a child is born in a home where tuberculosis exists, certain rules must be followed. If the father has active tuberculosis he should be rigidly instructed as to the dangers of infecting his child, or better still be sent to a sanatorium. In case the

mother has tuberculosis she should not be permitted to nurse her child or to have the care of the child; preferably she should be sent to an institution. If this cannot be done the physician must explain in great detail the grave danger of the child becoming infected.

Prevention of tuberculosis in children then depends on following out a few general principles.

- (1) Keep the child from contact with tuberculous people.
- (2) Insist that children be cared for and fed according to the latest instructions laid down in pediatrics.
- (3) Always regard any disease of childhood as one that will lower the resistance to tuberculosis and see that the child has made a complete recovery before it is allowed to be up and around.
- (4) Advise all children to play in the open and to have sun baths.

C. M. H.

The Mop-Up Squad PHYSICIANS WORKING in other lines of medicine and surgery are standing by in a state of perplexity awaiting the final decision of phthisiologists as to whether the treatment of tuberculosis is to remain in the jurisdiction of the internist or whether it is to be placed in the hands of the surgeon.

James Alexander Miller, speaking in the clinic of Chicago's great chest surgeon, the late Carl Hedblom, only a few weeks before Dr. Hedblom's untimely death, said that no longer did sufferers from tuberculosis travel long distances to desert or mountains but now seek relief from the surgeon in our centers of population like Chicago and New York.

We have been so zealous for the millennium in tuberculosis that we have gone to dizzy heights of enthusiasm with every great discovery that appeared promising in the treatment of this malady. Koch was sure his tuberculin would prove the cure of tuberculosis. With the several refinements of tuberculin came waves of popularity for tuberculin treatment only

to recede into the calm of unpopularity that must follow faddishness. Far swinging of the pendulum, first to, then fro, followed the advent of Rollier's heliotherapy, sanacrysin, B-C-G vaccination, et cetera.

These splendid and useful contributions have had to fall by the wayside because of the reaction to a fling in the limelight. Doctors as well as patients have fallen victims to enthusiasm and faddishness for the new things in tuberculosis.

Let us analyze more soberly that great contribution—surgery in tuberculosis. Let us give it dignified consideration that it may not suffer the devastating reaction that has come to other great contributions to the fight on tuberculosis.

Rest and rest alone has stood the test of time and is today as always the classical treatment of tuberculosis. In the infiltrative stages of pulmonary tuberculosis and before ulceration is extensive, rest, either relative or profound, is indicated, first, that resolution may be obtained and finally, restoration of function. Disciplined bed rest gives the desired relative rest; artificial pneumothorax, the profound.

Whether through diagnostic failure or inadequate treatment the stage of ulceration, excavation and fibrosis has been attained, a vastly different problem presents. Resolution has taken place through ulceration and destruction. A wreck of cavitation and scar remains, parenchyma is destroyed, restoration of function is obviously impossible. The patient is struggling to overcome the insult of this wreck of proliferation and necrosis.

Surgery offers us the only solution of this problem—mechanics for a mechanical problem. The permanent collapse of this mass of cavitated fibrosis and granulation is imperative. Surgery removes the rigid bony cage, renders toneless the powerful diaphragm and allows collapse of the wreck.

Here we should ponder over the fact that surgery in tuberculosis is unlike other surgery. This insulting infected mass is not amputated; it is only collapsed,

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but is otherwise intact. It requires years to attain the maximum result from this indirect attack. We have not removed the infection; we have not restored function. We have prepared the patient for his possible rehabilitation—the end result a cripple, short one lung.

Is not the great tuberculosis problem still early diagnosis?—a diagnosis sufficiently early that the patient may be placed under treatment, either conservative or intensive, to the end that we may expect not only resolution but restoration of function. There is little excuse for either the doctor or patient allowing the case to go beyond the stage where restoration of function may be a reality.

Then if our present knowledge is sufficient to make early diagnosis on all cases of tuberculosis, and if our present knowledge is sufficient to provide adequate treatment for early tuberculosis and restoration of function may be expected, does it not follow that the major role of surgery in tuberculosis is that of the mop-up squad, to clean up the accumulated cavitation cases of the past two generations? Should it not have a comparatively small role following the clean-up?

No more marvelous piece of successful treatment has ever come to the tuberculous sufferers than surgery of the chest, but let us give it the dignity of truth that it so justly deserves, and not exploit it as the future solution of the tuberculosis problem which might finally bring it to a state of ill-repute, an injustice it should never suffer.

O. E. E.

Antiquated Policies LACK OF adaptability to the constantly changing conditions involving the tuberculosis problem in the past thirty years has left policies then adopted still in force.

In perhaps no other medical problem have conditions changed more than in the tuberculosis problem. The peculiarities of the tubercle bacilli, their widespread presence at all times, the complicated epidemiology of the disease, the development and revolutionary changes of x-ray diagnosis, the development of the public health

movement, the failure to discover the specific immunizing agent, rapid changes in the practice of medicine, the added surgical procedures in treatment, new health implications in the ever-expanding industrial movement, and now the new problems arising due to the great depression; these things were probably enough to stifle ready adaptability in many instances to the situation as it now presents itself; especially as to the control of the spread of the disease. Many are convinced that bungling politics, lack of statesmanship and ignorance of political science on the part of the members of our profession, as a whole, have done more to retard the public health and with it the anti-tuberculosis movement than anything else. If the public health movement is to include tuberculosis as one of its problems, then in the control of the spread of tuberculosis, the principle of *contagious disease control* should be applied.

In many of our public institutions, the rule is to admit only the very early cases—thus naturally admitting at least a small percentage of non-tuberculous cases and decreasing the number of open cases that should be segregated by admission. If the state is to enter the picture of the tuberculosis problem at all, its only excuse can be for the control of the disease. One of the greatest benefits a state or community can possibly derive from a public-supported institution is the protection such an institution affords in the hospitalization of the open-infectious case of tuberculosis.

Many authorities in public health work claim this benefit far surpasses the individual benefit derived by the patient.

Thirty years ago, before the days of pneumothorax and the later surgical procedures, a large percentage of the open cases remained open. However, today, a great number of the open cases may be rendered closed cases by the later methods and the patient returned to his home no longer a menace to his family or community.

It should be our hope that these antiquated policies will soon be cast aside. If the necessity should arise, we should exert the combined influence of the various health departments and the medical profession at large to bring about the changes and thus compel all public-maintained institutions to deal with tuberculosis as a preventable and communicable disease, by admitting the open cases in preference to the closed cases. C. M. H.

Indications for Collapse Therapy

THERE IS no form of treatment for pulmonary tuberculosis in which such rapid progress has occurred in recent years as collapse therapy.

While it came into general use in this country in the form of artificial pneumothorax about 1912, it was only used in the exceptional case for some years. During the writer's experience its use has extended from a small percent of cases with ideal indications to the point where it is at least considered in every patient whose disease has passed through the early stages.

My purpose in this paper is to bring out a few points on the indications for the various forms of pulmonary collapse used in phthisio-therapy, mainly because I believe there is a growing tendency to carry this treatment to the other extreme. This is often the case when a method of treatment meets with success and it would seem wise to strike a happy medium between extreme conservatism and the more radical measures which are beginning to be employed.

Of all forms of collapse therapy, artificial pneumothorax remains the best procedure, if it can be used, as it is the simplest and safest and affords the most satisfactory collapse of the diseased area. It has the additional advantage that it can be abandoned should active disease occur in the contralateral lung. The ideal indications are extensive disease in one lung with little or no disease in the other. The tendency in the past has been to delay compression until the patient was given a chance to improve without it; however, in so doing valuable time has frequently been lost as during the delay adhesions have formed which prevented either the induction of the pneumothorax or sufficient collapse to be effective. While we are aware of the fact that extensive pulmonary disease with cavitation may heal without collapse, the chances are so much better with it, that pneumothorax had better be induced at the start in this type of

BY
EDWARD W. SCHOENHEIT
Asheville, N. C.

case; in fact, when an ulcerative process of any extent has been established pneumothorax had better not be

delayed. We no longer hesitate to induce a pneumothorax in the presence of a small infiltrative process in the contralateral lung, and in fact we frequently note that these infiltrations clear up more rapidly after the other lung has been collapsed. Due to the fact that air tends to collapse the diseased area first, we may be able to induce a selective collapse and compress any part of the lung where it is needed. When there is a process in the opposite lung, this is the best plan to follow. Selective bilateral collapse in the presence of bilateral cavitation is a more recent development in pneumothorax therapy and has not met with considerable success in carefully selective cases, but naturally the method is more limited.

Due to the successful treatment of advanced cases, the tendency to induce pneumothorax earlier in the disease has been the natural course of events; however, there is a limit to be reached and it seems that unless cavitation or extensive ulceration is present the patient should be given a chance to improve on a sanatorium regime. The view that in time pulmonary tuberculosis will become a surgical disease seems to me to be erroneous. Pneumothorax or any form of collapse remains an adjunct to the treatment; and in view of the dangers and complications which may ensue I am not in sympathy with the use of pneumothorax in early cases with slight or moderate infiltration often even with a negative sputum. Should this type of case fail to improve by rest and careful management there will be time for pneumothorax therapy.

Phrenicectomy is a method very popular in some sections and seldom used by others. It rarely gives as satisfactory results as pneumothorax but at times the results are brilliant. We now have a case with extensive unilateral, upper lobe, cav-

itation in which pneumothorax could not be induced and thoracoplasty was refused, in which after three months, after a phrenicectomy by Dr. Julian A. Moore, the cavities are less than one-third the size and the comparison of x-ray films is almost unbelievable. The patient had been on bed rest previously before coming to Asheville. While the above case is the exception, phrenicectomy should be tried on these cases especially since the operation is relatively easy for the patient. In a case of partial pneumothorax, phrenicectomy may give the added collapse necessary to effect the closure of a cavity. We have seen cases with cavitation in which pneumothorax had been abandoned or where the space had been lost and seen the cavity close after phrenic excision. Phrenicectomy is more effective in apical than basal cavities due to the fact that the latter are usually associated with adhesions which prevent the ascent of the diaphragm. Phrenicectomy should be used with caution in cases complicated with dyspnea and if done at all, only a crushing of the nerve should be employed. Phrenicectomy is usually performed as a preliminary to thoracoplasty.

Extrapleural thoracoplasty is the operation of choice when pneumothorax can not be induced and the process is too extensive or does not show improvement after phrenic excision. Naturally, the

cases are selected with greater care, as it is a serious procedure and cannot be abandoned; however, when other measures have failed and the patient is thought to have a poor chance to recover without collapse therapy, or that the cure will be greatly prolonged, it should not be delayed. It is contraindicated in the presence of active disease in the contralateral lung. Thoracoplasty should not be considered as a last resort measure and should be performed before the patient's general condition becomes unfavorable.

Pneumolysis, or cauterization of adhesions, is often of striking benefit. By severing adhesions a partial pneumothorax may be converted into a complete, or a cavity which is held by adhesions may be freed and successful closure accomplished.

Conclusions

Pulmonary tuberculosis in the early stages should be treated by rest and careful management which is best carried out in a sanatorium.

Pneumothorax should not be tried in early cases until they have been given a chance to improve by conservative methods. In more advanced cases it had better not be delayed.

Thoracoplasty should not be used as a last resort and should be performed earlier in the disease when pneumothorax cannot be induced.

OBITUARY

The death of Franklin D. Martin, Director of the Journal of the American College of Surgeons, has come to our notice. Few men living in the last fifty years have exerted as much influence on the medical profession.

His ability as an organizer has seldom been surpassed in any sphere. He was

one of the best known men of the medical profession.

His presentation book, issued in October, 1934, should be in the library of every doctor of the age. It is an inspiration to the old and the young alike, and should be read by every student who contemplates following his beloved profession.

Environment in the Treatment of Pulmonary Tuberculosis

THERE WAS a time when the treatment of pulmonary tuberculosis was largely, if not solely, a matter of environment. The activities of the physician were limited for the most part to such symptomatic medication as was indicated for relief of symptoms. If we consider treatment to consist of measures carried out by the physician himself as an attack on the underlying disease, then there was no treatment.

In the course of a generation the situation has become reversed. Today the stress lies on treatment and an enormous amount of good is being accomplished with artificial pneumothorax, phrenic exaeresis, thoracoplasty and, in some selected cases, chemotherapy with gold sodium thiosulphate. In the enthusiasm for the more active attack on the disease the matter of environment is being lost sight of or at best relegated to a very subordinate position.

It is now time for us to ask whether the pendulum has not swung too far and whether environment is not worthy of more consideration than it has been receiving. Our modern hospitals, which in the beginning were scientifically constructed workshops for the effective treatment of acute medical and surgical conditions, now reflect the influence of environment in the effort to combine homelike, or at least hotel-like, rooms and furnishings with the very best facilities for such treatment as may be needed.

If environment is a very real, though intangible, factor in the recovery from illnesses requiring a comparatively brief period of treatment, we may be sure that in a long drawn-out ailment like tuberculosis it is of an importance sufficient to merit the careful consideration of the attending physician. In other words, we must recognize that environment wields

BY
DR. W. A. GEKLER
Albuquerque, N. M.

an influence great enough to profoundly affect treatment, and that the results of the most skilled treat-

ment may be impaired by unfavorable surroundings.

The first consideration is of course the immediate surroundings of the patient. In addition to meeting the requirements of hygiene and cleanliness, they should make available proper ventilation as well as lighting. In this connection it may be well to advise caution in the matter of sunlight. Too much light in the sick room may cause headaches and eye fatigue, and, if allowed to shine directly on the patient, may cause fever. Nor can the esthetic sense of the patient be neglected. An offensive picture, garish hangings or an obtrusive color scheme can become exasperating to the point of madness when one is exposed to them continuously over a period of months.

The business man must be removed sufficiently far from his business that he is spared the annoyances of the petty and harrassing details of his work. Before the widespread use of the telephone and automobile a comparatively short distance sufficed, but today he must travel far to escape these pestiferous conveniences and become inaccessible to his business. More often than not the family and ordinary home routine are disturbing factors; either the family is over-solicitous or there may be a very trying lack of harmony. Occasionally, the family adjusts too promptly to a possible fatal termination of the illness and there results a defeatist atmosphere which is hardly conducive to recovery.

A woman who has her home to manage and direct is in even greater need of a complete change of environment than is her husband. The home is her place of

(Continued to page 22)

The Advantages of Intrapleural Pneumolysis

INTRAPLEURAL PNEUMOLYSIS is not of itself a method of treating pulmonary tuberculosis. It is an aid

to the establishment of collapse of a diseased lung or collapse of the diseased portion of a lung by effective artificial pneumothorax.

There is much evidence to indicate that artificial pneumothorax is the most effective method of treating active progressive unilateral tuberculosis. The tendency is toward using pneumothorax in these cases in earlier and earlier stages of the disease.

The aim of treatment with pneumothorax is to collapse diseased lung tissue. Another definite aim should be to avoid collapsing sound lung tissue unnecessarily. These principles of treatment give rise to various types of artificial pneumothorax.

Thus we bring about total collapse of the lung if the major portion of it or all of it is diseased. We wish collapse of the apex or of the upper lobe if the disease is there and do not collapse the lower lobe or lobes in this case if we can collapse the upper lobe without doing so. This is the so-called selective type of pneumothorax. At times a selective collapse of the lower lobe also may be obtained, for the affected lung tissue collapses much more readily than the undiseased lung.

The type of configuration of the pneumothorax may become quite bizarre if there are adhesions between the visceral pleura covering the lung and the parietal pleura. When this occurs large amounts of air and high pressures have often been used in attempting to stretch the adhesions. This frequently brings about complete collapse of the whole lung except the portion held by adhesions, this usually being the diseased area. This area collapses as fully as the stretching of adhesions will permit.

The ideal pneumothorax to my mind is

BY
VICTOR RANDOLPH, M.D.
Phoenix, Arizona

the selective type. This type is often available only if treatment is begun early when only a portion of the

lung is involved, before extensive destruction can occur, and before adhesions have time to form. This type not only assures collapse of diseased lung tissue, but allows undiseased lung and pleura to maintain its resiliency so that the lung can later enlarge and fill the chest and restore some lung function after the diseased portion has healed and become scar tissue.

Selective collapse is absolutely essential in those desperate cases of bilateral progressing tuberculosis where it has now become possible and not uncommon to use pneumothorax simultaneously in both chests. In these cases the undiseased lung must continue to function as fully as possible while the diseased portions are kept collapsed.

When pleural adhesions are present in the diseased portions of the lung in these cases, selective pneumothorax frequently cannot be established without cutting the adhesions.

The figures of Matson show, in unilateral pneumothorax, that about 60% of all patients treated have adhesions. One-third of these have adhesions throughout the chest. In two-thirds of these, or 40% of all cases, a partial pneumothorax is established. Many of these are successfully treated by pneumothorax, but a large number must have their adhesions cut if treatment is to succeed in curing them. According to a recent writer (Forsee), one-third of all cases get only a partial collapse. He estimates that about one-third of these require cutting of adhesions. With perfection in the technique of operation I believe we will find a larger percentage benefitted by it. Stiver, who told me recently that he had operated about one hundred and thirty cases with adhesions, estimated that 15% of pneu-

mothorax cases are suitable for this treatment.

The advantages of intrapleural pneumolysis, or cutting of pleural adhesions, are the advantages of effective artificial pneumothorax. The disadvantages or the complications of this operation are in no way comparable to the disadvantages to the patient of continuing ineffective pneumothorax, the end results of which have been found to be poor.

A successful intrapleural pneumolysis is thus a life-saver to the patient in that it brings about an effective collapse of his diseased lung and gives an opportunity for eventual cure. As already mentioned, the preservation of the sound portion of the partially collapsed lung and pleura affords an opportunity for eventual re-expansion of the undiseased lung and the return of pulmonary function, sometimes to an almost normal degree.

The establishment of selective pneumothorax is particularly important in a case in which there is some definite but slight active involvement of the contralateral lung. In this type of case selective pneumothorax of the more involved side preserves the possible maximum of vital capacity and thereby gives the less-involved lung a better opportunity to heal; whereas if ineffectual pneumothorax only is obtained, the probability of progression of the disease in the lesser-involved lung is heightened.

Pneumolysis is occasionally of great immediate value in cases of hemorrhage coming from a partially collapsed cavity held open by adhesions which can be cut.

It has a marked economic advantage not only in restoring health but in decreasing the duration of the disability by shortening the period of ineffective treatment. This decrease in time of treatment is also of some social importance, especially in the case of young people, for it saves a prolonged period of invalidism.

Even when all adhesions cannot be liberated, the cutting of some of them at times will allow a sufficient collapse of the diseased portion of the lung so that eventual healing may occur. A partial

intrapleural pneumolysis is therefore often of value.

In the case of bilateral disease requiring simultaneous bilateral pneumothorax, the presence of adhesions may spell complete failure of the treatment unless the lung is liberated. In these cases it is usually only by intrapleural pneumolysis that selective bilateral pneumothorax can be established. At the present time Dr. Fred Holmes, Dr. Howell Randolph, Dr. George Thorngate and myself have under treatment some fourteen cases of clinically successful simultaneous bilateral pneumothorax, which have been made possible only by intrapleural pneumolysis on one or both sides. Not all adhesions have been liberated in all these cases as in at least three of these only a partial pneumolysis was possible, yet a sufficient freeing of the lung was accomplished so that the diseased area could be collapsed without using enough pressure to affect the sound lower portions of the lung.

This method is almost of equal value in those cases in which pneumothorax must be used first on one side of the chest and successively on the other side.

Finally, intrapleural pneumolysis has a field of importance in those cases of bilateral disease where pneumothorax is prohibited entirely on one side by diffuse adhesions, but may be established on the other side successfully by the aid of cutting adhesions. In these cases if an adequate selective collapse can be obtained on one side, we find that effective treatment on this one side can often be carried out until the lung is healed sufficiently to allow surgical compression of the other side which has not yielded to attempted pneumothorax. These cases are of course all desperate ones, but the treatment is not necessarily as desperate as would seem. If selective pneumothorax is established, the patient is given a fairly good portion of sound lung with which to breathe in addition to whatever breathing space remains in the uncollapsed diseased lung, and this is sufficient to carry on life. If the disease in the uncollapsed lung progresses rapidly the situation is of

course hopeless, for one to two years must elapse before the selective pneumothorax can successfully heal the other lung.

However, these patients seem to do remarkably well, and cures of this type will eventually be reported.

Case 1

S. G. Referred by Dr. Fred G. Holmes. A woman, 25 years old. Teacher. On May 14, 1932, physical and x-ray examination showed a cavity near the left apex and some active infiltration in the right apex. (Fig. 1.) Artificial pneumothorax on the left was attempted within a short time after the first examination. Adhesions were found, (Fig. 2), which prevented collapse of the cavity and at operations in December, 1932, and in August, 1933, these were cut under local anesthetic. There was meantime no definite progression of disease in the opposite lung, although in this case about four months elapsed before the cavity closed after all adhesions were liberated. (Fig. 3.) A greater collapse of the lung was necessary in this case to bring about closure than is ordinarily the case, (Fig. 4), but at the present

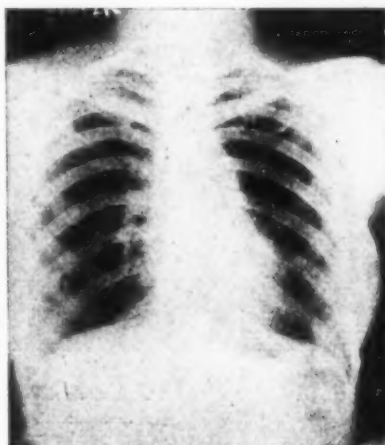


Fig. 1—Case 1

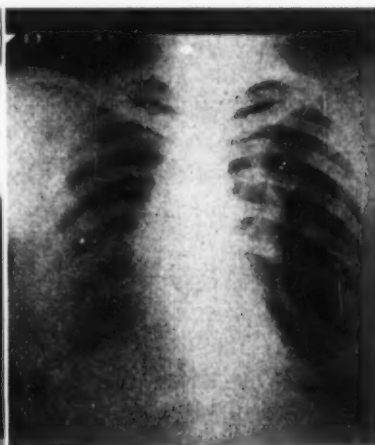


Fig. 2—Case 1

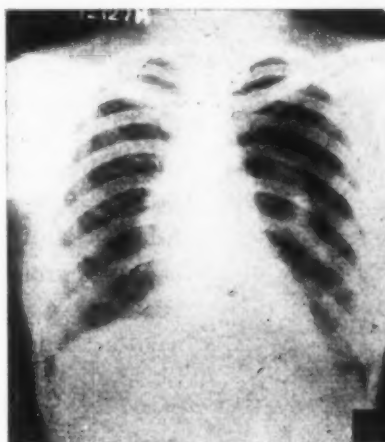


Fig. 3. Case 1. Six months later mediastinal adhesions still present.

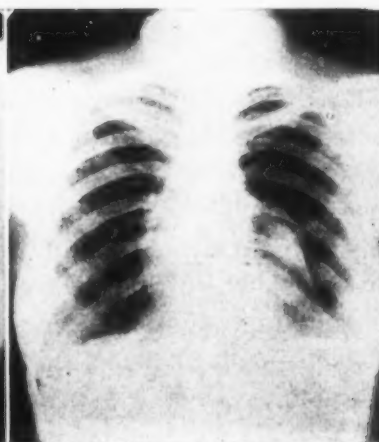
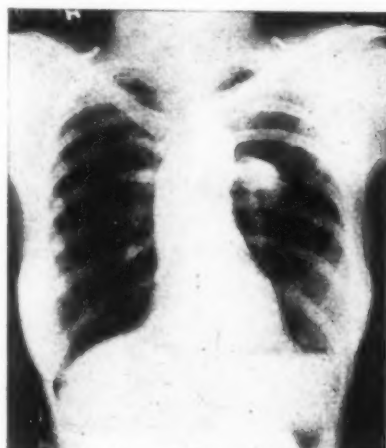


Fig. 4. Case 1. Seven months later. The cavity remained open 4 months after all adhesions were liberated.

Fig. 5—Case 2



time she has a selective type of pneumothorax, and the lesions in the right lung have undergone some definite healing.

Case 2

M. S. A similar type of case also referred by Dr. Fred G. Holmes is next shown; but in this case the original film showing the large cavity in the apex of the left lung and the succeeding film showing the adhesions present have been lost. Five short thick adhesions were liberated in this case on March 9, 1933, over a year after the establishment of pneumothorax, and she has at the present time a selective type of pneumothorax without evidence of cavity. (Fig. 5.) The disease which was originally present on the right side has so far remained quiescent.

Case 3

B. S. Here rather marked bilateral disease with some cavitation was present, (Fig. 6), when patient was first seen. Treatment would probably have been continued rest in bed and dietary regulations for a time except for the fact that he began to have severe hemorrhages from the right lung. Artificial pneumothorax was therefore begun on the right side but the hemorrhages were not controlled until a lateral adhesion, (Fig. 7), which prevented collapse of the cavities in the lung, was

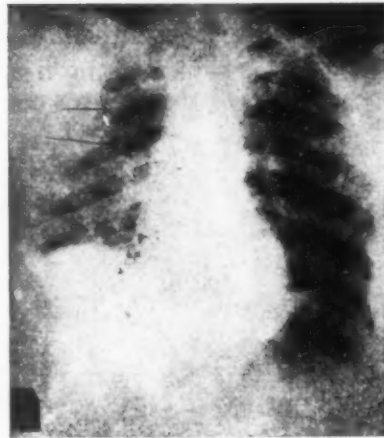


Fig. 6. Case 3

Fig. 7. Case 3
Hemorrhage was controlled after the adhesion was liberated.

liberated. The hemorrhages controlled, the patient made excellent progress for several months until he went to another state.

Case 4

R. Z. In this patient, the economic factor was important. This woman, age 34, worked as secretary (although she had tuberculosis) for five years in this climate before having acute exacerbation, at which time, March 7, 1933, she consulted me. Examination showed a very marked involvement of the left lung with adhesions. There was a large cavity below the left clavicle. (Fig. 8.) Artificial pneumothorax on the left was begun March 20, 1933, and the symptoms markedly relieved. (Fig. 9.) However, the sputum remained positive and the cavity was

not fully collapsed owing to multiple adhesions. These were cut in successive operations on July 3, 1933, and July 28th, 1933. The symptoms were entirely relieved following these operations, the patient's general condition improved markedly and she was able to return to work a month after the second operation. She has remained well and at work; and the more than slight infiltration which was present originally in the right lung has remained quiescent. In this case more than a selective collapse has been maintained because of the original extensive involvement. (Fig. 10.)

Fig. 8. Case 4

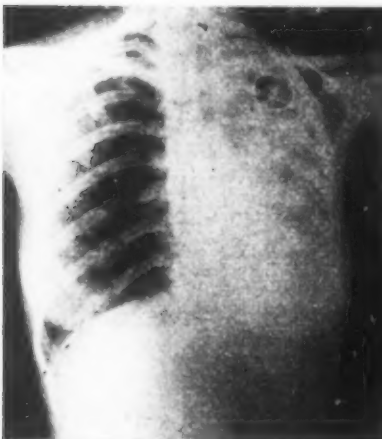


Fig. 9. Case 4

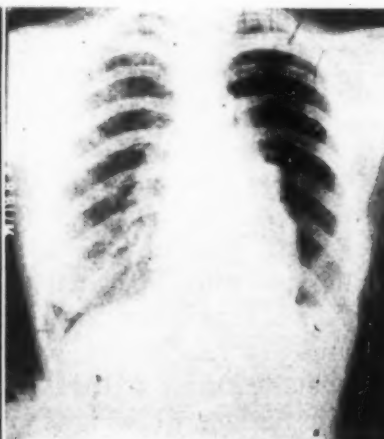
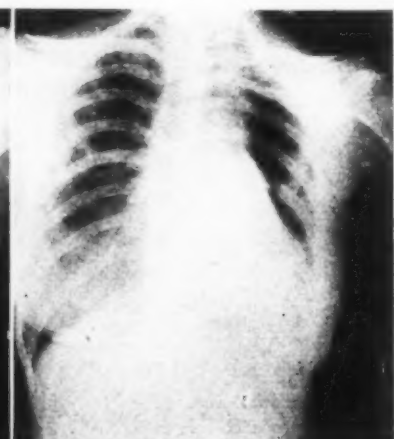


Fig. 10. Case 4



Case 5

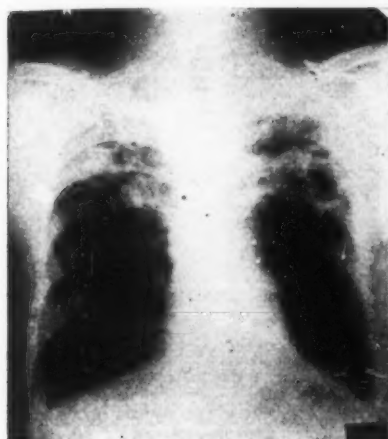


Fig. 11. Case 5



Fig. 12. Case 5

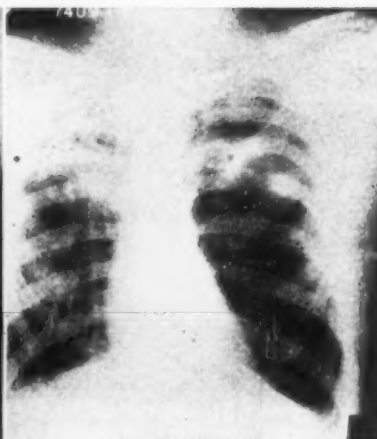


Fig. 13. Case 5

G. S. The following case, referred by Dr. Fred G. Holmes, illustrates what may be accomplished at times by only a small partial pneumolysis. In this case there was extensive bilateral disease of the upper lobes. (Fig. 11.) Artificial pneumothorax on the right side was attempted. However, diffuse adhesions prevented any collapse. Artificial pneumothorax was then begun on the left side but only a partial collapse was obtained. (Fig. 12.) Thoracoscopy was done on September 11th, 1933, about two months fol-

lowing the film shown. A few very small adhesions at the base were cut, the examination showing that the lung was plastered against the chest wall by very diffuse sheets of adhesions which offered no opportunity for cutting. Nevertheless a considerable improvement in collapse following this small partial operation was shown, and the cavities on the left side are now apparently closed. (Fig. 13.) In the next few months pneumothorax on the left side can be discontinued and a partial thoracoplasty of the right chest done.

*Case 6

L. P. A school teacher, age 26, was first seen August 11, 1930, but did not return again until November 27, 1931, at which time she showed little effect of over a year of bed rest on her extensive bilateral tuberculosis. (Fig. 14.) Artificial pneumothorax of the right side was begun in January, 1932, but adhesions prevented collapse of the cavities in this lung. (Fig. 15.) About a dozen adhesions were cut on May 9, 1932, permitting selective collapse. (Fig. 16). However, the left lung did not improve sufficiently, so that artificial pneumothorax was begun on the left side October 24, 1932. (Fig. 17).

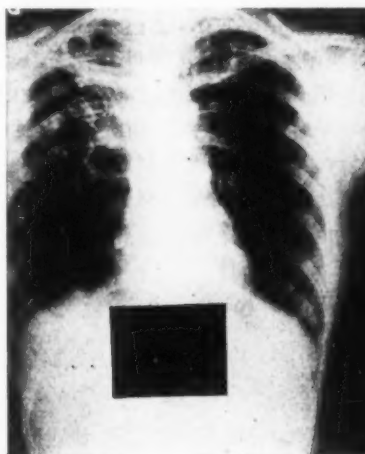


Fig. 14. Case 6

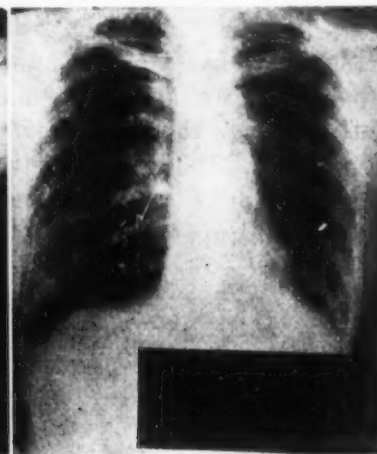


Fig. 15. Case 6

Here again adhesions prevented collapse of a cavity at the apex and these were cut on February 6, 1933, permitting a selective collapse of the left side also. This bilateral selective collapse has been continued until the present time. (Fig. 18). This young lady is now attending college.

*This case was reported but not illustrated in a previous article, "Surgical Treatment of Pulmonary Cavities in Tuberculosis." Southwest Med. 18, 201; (June) 1934.

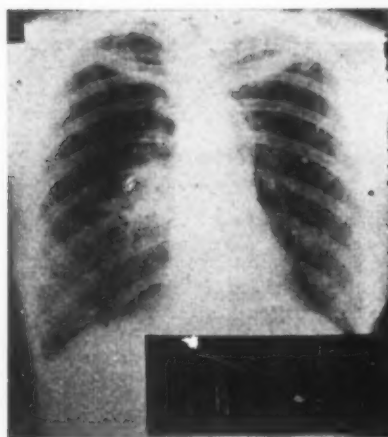


Fig. 16—Case 6

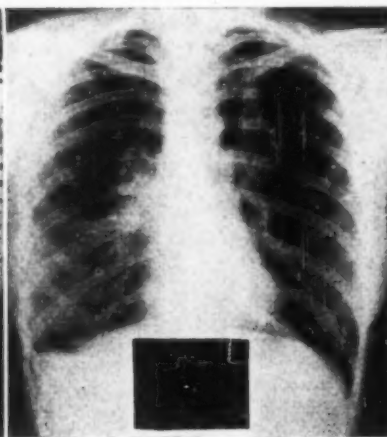


Fig. 17—Case 6

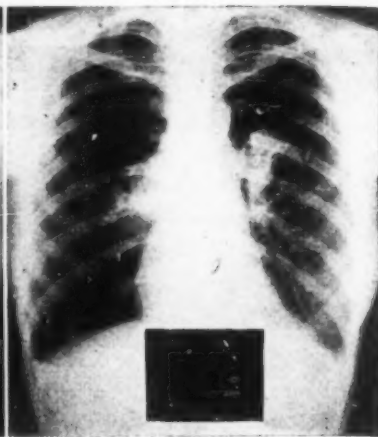


Fig. 18—Case 6

Case 7

W. P. Referred by Dr. Fred G. Holmes. A woman 26 years of age, first seen by Dr. Holmes January 20, 1933. Because of extensive bilateral tuberculosis with cavitation, (Fig. 19), artificial pneumothorax on the more involved right side was first attempted. The lung on this side was found to be entirely adherent not permitting any collapse. Artificial pneumothorax was therefore begun on the left side on July 8, 1933. Film of August, 1933, (Fig. 20), shows partial collapse of the left lung with cavitation still present, the lung being kept from collapsing by pleural adhesions at the apex. Intrapleural pneumolysis on the left side was therefore performed on September 8, 1933, and selective type of pneumothorax was obtained which has been continued to the present date.

(Fig. 21.) The patient's general condition has more than remained stationary despite the extensive involvement on the right side and the presence there of several cavities. She is constantly in bed but is not too short of breath to come to the office occasionally for fluoroscopic examination. She has gained considerable weight and has little fever. In this case it is expected to maintain pneumothorax on the left side for an additional period of several months in order that sufficient healing of the left lung may occur to permit its re-expansion. At that time thoracoplasty of the right chest may be done safely and the patient restored to some degree of health. It is even possible that she may be comparatively well once the left side is healed and the right lung is thoroughly collapsed.



Fig. 19—Case 7

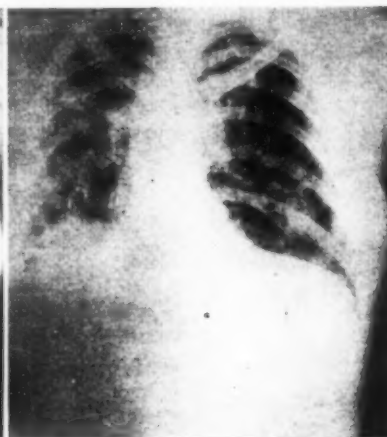


Fig. 20—Case 7



Fig. 21—Case 7

The Patient and the Sanatorium

NUMEROUS ARTICLES

have been written on the early diagnosis and treatment of pulmonary

tuberculosis, and today the chest men, as well as the general practitioner, are agreed on the fundamental principles in treatment. Rest of the diseased lung is the basis of treatment, and it can be obtained either medically or surgically; at times both measures are used.

When the diagnosis of pulmonary tuberculosis is made, the usual questions asked are as follows:

1. Do I have pulmonary tuberculosis, and, if so, how much of my lung is diseased?

2. Can I get well, and how long will it take?

3. Where is the best place to be treated, and what results will be accomplished?

The first question can be decided by the clinical history, physical examination, and X-ray, and in some cases, time. The answer to the second question is determined by the extent of the involvement, also by that intangible thing called "resistance of the patient," and by the absence of severe extrapulmonary complications. The third question may be answered by the positive statement that the sanatorium is the best place to obtain an arrestment of the disease. The sanatorium affords the training that teaches the patient to re-adjust his habits and to learn to direct his mental and emotional attitudes in the least time with the best results.

When the diagnosis of pulmonary tuberculosis is made, the patient should be urged to enter a sanatorium—state, federal, city or county, or fraternal or private. Rest, the cardinal point in treatment, can best be followed in an institution where the hours of rest are rigidly enforced and where everyone has to conform to the same rules. Since complete bed rest for the acutely active with pronounced clinical symptoms is insisted upon, the home

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is not the best place to obtain rest. In the home the patient sees visitors at all times during the

day; he attempts to transact his business or manage household affairs from a sick bed; he is disturbed by the social activities of other members of the family, who create confusion both on leaving the house and on returning at late hours; noise of all kinds—traffic, radios, neighbor children at play — keeps the patient upset; either on account of the lack of knowledge concerning the disease or because of some layman's preconceived ideas as to treatment, members of the family fail to co-operate in keeping the terms of the rest schedule.

Physicians doing private practice usually have a struggle with the patient, the family, and the well-meaning friends. Friends and visitors mean well, but they occupy a very small place in the treatment of pulmonary tuberculosis when they do not interfere, but are a grave problem when not controlled. It is a common occurrence for the physician to make a subsequent visit to the home only to find that the hours of rest have been changed, meals are being served irregularly, and even food which has been prohibited has been brought in by some neighbor who would never feel herself responsible for the patient's intestinal upset. Perhaps the patient has been taken for an automobile ride, is occupying the room with some other member of the family, or is being worried by literature, written by some one not informed on the subject, suggesting this and that method of treatment.

In truth, treatment in the home has so many disadvantages that the removal of a sick person from the family is the greatest favor a doctor can do for him. In my own experience I have seen on more than one occasion a sick person killed by kindness. An outstanding case is that of an anxious and exercised mother, with a young daughter, who will not let the child

be alone; she continually asks the patient how she feels, whether she would like this or that to eat, and about her symptoms. The ultimate result is that the mother takes the patient here and there, finally running into an open grave.

All informed people know that there is no specific medication for tuberculosis and that all measures adopted are indirect, tending to rest the diseased part and to build up the patient's resistance. With this generally known, the laity and some physicians assume that the physician does not have a prominent part in the treatment. It is true that many patients can be educated in the treatment of tuberculosis and will learn much, but getting them to apply their knowledge so they will stay in line is another problem. The physician has a most prominent part, for he is the crutch to lean upon. His daily routine visit is necessary because many questions come up in the minds of the sick persons, and some one who knows has to give the answers. If not, some one else will do so with the result that wrong advice will be given and bad results will follow. The physician stands for authority and discipline, and the latter has to be rigidly enforced. That the patient looks to the doctor for cheer and encouragement, as well as relief from distressing symptoms, is a fact that should be kept constantly in mind by anyone treating the disease.

Another point to bear in mind is the constant danger of infection to the family. Children are usually infected when the diagnosis is made, especially in the poorer homes; but regardless of how well we instruct the patient in transmission of the

disease, the use of sputum cups, the necessity of separate sleeping quarters, and proper care of dishes, these precautions are hard to take and the patient has to be eternally vigilant.

Rules have to be followed if satisfactory results are obtained, and they can best be followed in a sanatorium properly conducted. Pulmonary tuberculosis is a disease measured in years, not in days or weeks, and this prolonged illness is much easier on the patient and the physician in a sanatorium. There is a spirit of comradeship and "teamwork" between patients and the physician, and the spirit of optimism and get-well attitude prevails in a sanatorium.

In recent years, the position that surgery occupies in the treatment of this disease has been brought to the front. It has taken time for this information and teaching to reach the medical profession, and will take longer to educate the public. To obtain permission from a patient to do some type of surgery, such as artificial pneumothorax or phrenic nerve avulsion, two of the simplest and most applicable procedures, is not difficult if the patient is in a sanatorium, because he sees others who are taking, or who have taken, this type of treatment and who have been benefitted. These two forms of treatment are more easily instituted in a sanatorium where they are applied daily and where the necessary equipment is to be had at any time.

The sanatorium for the treatment of pulmonary tuberculosis occupies the same position as the general hospital for the surgical and medical treatment of different diseases.

The author concludes that if a tuberculous subject does develop asthma it can usually be relieved by a course of specific desensitizing injections, because the patient is generally subject to some specific agent of an inhalant nature. He also concludes that, in rare cases, the sensitizing agent may be bacterial in origin; usually, the bacteria is of a secondary invasion.

G. W. BRAY, M. D.: Tuberculosis and Allergic Diseases. *British Journal of Tuberculosis*. Jan. 1934.

Bray draws the following conclusions:

- a. Only one person with active tuberculosis in 200 suffers from true asthma.
- b. Only one asthmatic person in 100 gives any positive evidence of active tuberculosis.

Primary Cancer of the Lung and Its Relation to Pulmonary Tuberculosis

PULMONARY TUBERCULOSIS

in its many manifestations may so resemble primary cancer of the lung that

only repeated careful examinations can settle the question. It seems to be generally accepted that primary cancer of the lung is much more frequently seen since the World War and a great increase of interest has been shown in the subject. Interest in pulmonary tuberculosis was never greater than at the present time and it is only natural that medical men the world over should attempt to discover what relation, if any, exists between the two diseases.

Tissue reactions due to irritants are generally accepted as one of the commonest causes of cancer and reference is frequently made to the large number of primary cancer of the lung found among the Schneeberg cobalt miners due to the irritant action of radio-active dust. Mention is also made of the fact that primary cancer of the lung is five times more prevalent in males than in females due to a preponderance of male workers in the dusty trades. These facts are interesting, but they do not wholly cover the situation, and we await the day when new light can be thrown on the whole subject of malignant disease.

If we accept "irritation" as a cause of cancer of the lung may we not number among the irritants chronic inflammation? In the reference outline of the committee on chest tumors of The California State Medical Association the statement is made that carcinoma of the lung frequently follows pulmonary tuberculosis and in Hruby-Sweany's excellent article entitled "Carcinoma of the Lung" in the October 1933 number of *The Archives of Internal Medicine*, Ewing is quoted as saying that tuberculosis is a possible causative factor.

Many other diseases which affect the respiratory tract are mentioned such as influenza, bronchiectasis, asthma, syphilis,

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pneumonia, etc.; but pulmonary tuberculosis seems to be the one most frequently considered. I should

like to present a few facts gleaned from a study of twenty-eight cases of primary cancer of the lung taken from the files of the Los Angeles General Hospital and four private cases to determine whether any of them bore any relation to tuberculosis. Of the thirty-two cases mentioned above twenty-six were males and six were females. The sex incidence in this series follows very closely the cases reported in recent literature. Thirty of the patients were white and two colored. The average age was fifty-one, the oldest being seventy-six, the youngest twenty-three. Sixteen of the cases came to autopsy and the diagnosis of primary cancer of the lung was confirmed. The remaining sixteen cases are either in the hospital, have returned to their homes or have died and autopsy has been refused. All were carefully reviewed by the malignancy board and the diagnosis verified. One case had a two-stage thoracoplasty done under the impression that pulmonary tuberculosis was present, but no tuberculosis was found at autopsy. One coroner's case was said to have a scarring in the region of the tumor mass that might have been tuberculosis. This is the only one of the cases in which tuberculosis entered the picture, and there is nothing in any of the histories or in the course of the disease to lead one to conclude that tuberculosis antedated the disease in any of the cases.

Physical examination of the chest shows considerable resemblance between the two diseases, but radio-graphically there is usually a marked difference. Infiltration in an early case of pulmonary tuberculosis is usually in one upper lobe and has the usual sleazy appearance, whereas in primary cancer of the lung there is mass involvement, large or small, and usually in

(Continued to page 22)

X-Ray in the Diagnosis of Pulmonary Tuberculosis

SINCE THE introduction of the stethoscope no accessory aid has come to us which has proved its value in the diagnosis of pulmonary tuberculosis as has the Roentgen ray.

Stereo-roentgenograms, or films, are now being made with such skill and precision that it is possible to obtain a very clear view of the lung in its most minute anatomic detail, and to observe with ease any abnormalities which may be present.

Fluoroscopy, while furnishing information of a different nature to that furnished by the film, likewise has its field of usefulness, and its importance must be duly recognized.

Some of the instances wherein properly made and skilfully interpreted stereo films are particularly helpful are:

1. In the diagnosis of the childhood type of tuberculosis involving the tracheo-bronchial lymph nodes, where physical signs and even general symptoms are either entirely absent or very few.

2. In those cases, in adults, in which the usual clinical procedures have failed to definitely establish the presence or absence of disease, and a strong suspicion still remains that there may be trouble. Here the X-ray will often disclose a focus of disease inaccessible to physical exploration, or one that is masked by other conditions.

3. In the differential diagnosis between tuberculosis and new growths in the lungs or bronchi, and lung abscess or bronchiectasis. In the study of new growths, particularly, it is quite important that lateral pictures be made, as well as antero-posterior ones.

4. In the study of cavities, which from physical signs are known to exist. Good stereo films make it possible to study more accurately the exact size and depth of the cavity, the thickness of its walls, its relation to adjacent tissues, and

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whether or not it empties well.

5. A tangible picture of conditions as they exist is at hand to be shown and explained with proper diplomacy to the patient himself or anxious members of his family.

6. A permanent record is supplied and may be filed for comparison with subsequent films in a series, and the progress either way accurately determined.

7. Recently the X-ray has been used successfully in the diagnosis of laryngeal tuberculosis by Pancoast in America and some roentgenologists in Germany and other foreign countries.

The use of the fluoroscopic screen makes possible a study of the movements of the diaphragm, the condition of the costophrenic angles, and the variations of pulmonary shadows in respiration and cough. It is also of great value in determining the presence of small collections of fluid, encysted or otherwise, and makes it possible to study the lungs and pleura from different angles by turning the patient about during the examination. This method does not give accurate information as to details of structure or extent of lesions, nor does it furnish any permanent record, so that it cannot take the place of X-ray films, and in general it should be considered but an adjunct to them.

While recognizing thus the great diagnostic value of the Roentgen ray, we should be reminded that it is only an accessory aid and cannot take the place of the clinical history, symptoms, the microscope and physical findings in arriving at a diagnosis. In other words, the clinician who undertakes to make his diagnosis purely as a result of a study of X-ray films, no matter how clear they may be or how good he may be at interpreting them, is destined to meet with disaster sooner or later.

It must be remembered that like any

diagnostic method its value will be measured by the technical skill of the physician in the making of the films no less than his ability to interpret them. The film must be clear and its markings well defined in order that the normal shadows may be distinguished from the pathological. The interpretation of hazy, or otherwise imperfect films, has as little justification as a physical examination of the lungs without disrobing the patient.

Skill in the interpretation presupposes not only a familiarity with Roentgen shadows, but also a working knowledge of the clinical and pathological features of tuberculosis. Unless such knowledge is at the disposal of the examiner, he will not be in a position to profit fully from his study of the film, nor will he be able to express in appropriate language the

clinical or pathological type of the disease. It is hardly necessary to point out that only a physician is possessed of the knowledge which is a necessary prerequisite of such an intelligent interpretation. It is an affront to the clinician to offer him, as is sometimes done, the opinion of a non-medical technician in a case of tuberculosis. The Roentgen diagnosis will inspire respect in the mind of the clinician commensurate with the medical knowledge of the Roentgenologist.

In conclusion, the X-ray examination of the chest is almost indispensable to the diagnosis and understanding of pulmonary tuberculosis, when employed in conjunction with other methods at one's disposal, and when this fact is recognized more generally, much higher standards of efficiency in the field of medicine will be attained.

ROSE, F: *Purulent Tuberculous Pleurises*. (Russian) Nov. Chir. Arch. 28: 387.

Tuberculous empyema develops most frequently during pneumothorax. It developed following spontaneous pneumothorax 13 times, 2 in thoracoplasty and only 4 developed in cases in which no pneumothorax had been performed. In all, tubercle bacilli were found in the fluid. In the treatment of these cases two methods are to be considered: conservative and surgical. The first consists in evacuating the fluid and washing the pleural cavity, by means of two puncture needles with from 5 to 10 liters of normal sodium chloride solution until the fluid runs clear. This procedure lasts from one to one and a half hours and was repeated in from five- to seven-day intervals, 15 or 16 times in all. When the pleural fluid remained purulent after that time and no cure or marked improvement was obtained, the case was considered unfit for conservative treatment. Twenty-four cases were treated by this procedure: 19 were pure tuberculous empyemas, of which 7 were cured, 7 were improved, and 5 were unchanged. Five were tuberculous empyema with mixed infection, all of which were fatal.

Surgical treatment consisted of paravertebral thoracoplasty, and with even better results in the complete costal resection of Rose. The latter is performed in three stages, with two or three weeks between stages. In cases with severe toxic symptoms the pleural cavity was drained at the first stage.

The results obtained by paravertebral thoracoplasty of Sauerbruch-Brunner type were not favorable. With Rose's operation without previous drainage on three cases, one patient was cured, one died with amyloid degeneration, and one was drained later. Better results were obtained by Rose's operation with drainage: of nine cases six patients were cured, in two suppurating sinuses persisted, one died.

Tuberculous empyemas with infection cannot be saved by conservative treatment. Rose's operation with primary drainage gives the best results: of 33 patients operated on by the procedure 11 were cured, 12 decidedly improved, 3 moderately improved, 7 died. Two were operated by the Schede's procedure: one was cured, one died. Of all these cases one-third were cured, one-third were able to work although with suppurating sinuses, one-third died.

ENVIRONMENT (Continued from page 10)

business and it is simply impossible for her to remain in it and not be concerned with its management. Where a few decades ago the job of housekeeping, if well done, completely occupied a woman's time, modern inventions have relieved her of routine drudgery to the point where she has considerable leisure for a broader social life. She needs protection, when sick, from her friends and social contacts and this is most difficult, if not impossible, unless she is so acutely ill that only members of the immediate family are permitted to see her. If not disturbed by the solicitude of her friends she is apt to be hurt by their remaining away from that fear of contagion which is the result of our intensive health education. And if there are children in a household it is essential that any member who has open tuberculosis and is a disseminator of tubercle bacilli be removed from it. The aseptic

technique, which is necessary for the protection of children against infection, may be faithfully carried out for a short period, but over a longer time it becomes burdensome and usually is slowly abandoned.

In conclusion, let me emphasize that the family physician who is faced with the responsibility of advising the tuberculous patient in the matter of treatment will do well to keep in mind the basic fact that whatever line of therapy may be indicated in any given case, environment will exert a potent influence in determining its success or failure. In addition to securing for his patient that form of treatment which promises the best end results in human happiness and social and economic usefulness, serious thought should be given to the matter of selecting the particular environment best suited to his physical and other needs.

PRIMARY CANCER (Continued from page 19)

the region of the hilum. From this radiate root-like lines of density into the adjacent parenchyma.

Examination of body secretions and excretions and blood is not remarkable. In some cases cancer cells may be found in the sputum or in the pleural exudate in cancer of the lung, whereas tubercle bacilli are usually found in the sputum and in the exudates in pulmonary tuberculosis.

Thus far the writer has tried to describe the general attitude of the medical profession toward the relation of pulmonary tuberculosis to primary cancer of the lung. He has also tried to show that from his case reports no strong evidence could be adduced to show an etiologic relationship.

As I have mentioned elsewhere, the symptomatology is similar and this also applies to the physical signs, but there are a few outstanding events in the course of primary cancer of the lung that are absent in pulmonary tuberculosis.

a. The first symptoms of primary can-

cer of the lung may be those of a pneumonia that fails to resolve.

b. Massive collapse and lung abscess due to obstruction of a bronchus is not uncommon.

c. Pain is a very common symptom and is difficult to control.

One can hardly discuss tissue changes and variations and a variety of other subjects and still be within the confines of the title, but the prognosis in primary cancer of the lung even in these days of rapid and intensive improvement in the technique of lung surgery can hardly be said to be good; whereas the early case of pulmonary tuberculosis is usually curable. Therefore, from the point of view of treatment the relation between the two diseases hardly touches at a single point.

Let us say, then, that primary cancer of the lung and pulmonary tuberculosis, judging from the cases described and the observations made, bear very little relation to each other except in symptoms and physical signs.

The Contagiousness of Tuberculosis

IT IS TRUE that tuberculosis is both infectious and contagious, but it is not contagious by contact as are measles and other acute infectious diseases. In other words, tuberculosis is not likely to be conveyed by such contact as riding in the same street car, walking on the same side of the

street, or even sitting in the same room with a tuberculous individual. More intimate contact than this is required.

The morbid fear which is harbored by many individuals is not justified and the knowledge that it exists among his friends adds to the unhappiness of the patient. The physician can do much in a tactful way to dispel such ideas.

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ABSTRACTS



This department is devoted to abstracts of articles carefully and judiciously selected by the Editorial Staff.

The Nutritional Value of Pasteurized Milk. *British Med. Jour.* 3830: 995-996 Ext. Editorial, *International Med. Digest.* June 2d, 1934.

From time to time the relative merits of pasteurized milk as compared to raw milk have been made the subject of discussion, and at the present time the opinion seems to be growing among members of the medical profession that milk cannot be recommended for human consumption in the raw state. Those who have advocated raw milk have contended that the nutritional value of milk is greatly impaired when it is subjected to pasteurization. It is interesting, therefore, to read the results of a comparative study which was made in England.

The investigation was carried out in 1930 in Lanarkshire, as follows: For four months in certain schools five thousand children of five to twelve years of age were given three-quarters of a pint of raw milk grade A (T.T.) milk a day, and five thousand children in the same schools were selected to act as a control series. In a second set of schools five thousand children were given three-quarters of a pint of the same milk pasteurized, and another five thousand children in the same schools were selected to act as controls. The children were measured and weighed at the beginning and at the end of the experiment. It was found that the children receiving extra milk grew more rapidly than the controls, and that the effects of raw and pasteurized milk were, so far as it was able to judge, equal.

After a special study of these figures by a committee from University College, London, they reported: "There is no evidence that raw milk has an advantage over pasteurized or pasteurized over raw in increasing growth when the two are directly compared. Thus the question of the value of pasteurization turns practi-

cally on the elimination of possible sources of disease, or on determining whether cases of certain diseases are less frequent when pasteurized rather than raw milk is taken."

These results of the investigation are compared with the investigation which was reported in the United States in 1932. It consisted of an extensive field of study of the height and weight, at the ages of ten months to six years, of two groups of children, one of which had consumed raw milk and the other heated milk. All together, over three thousand children were studied, and the conclusions were that there was no evidence to suggest that the growth-promoting capacity of heated milk was measurably less than that of raw milk. It is, however, of particular interest to notice that children receiving mainly raw milk had suffered from diphtheria, scarlet-fever, intestinal disturbances and rickets more than children who had received heated milk only.

HEACOCK, H. E: *Classification of Intestinal Tuberculosis.* *Amer. Journal of Roentgenology and Radiotherapy.* 32: 717-854. Dec. 1934.

The author does not agree that calcium deposits in the intestinal tract are to be considered diagnostic of intestinal tuberculosis in more than 52% of the cases. In such cases it may be of value in the estimation of the extent of healing. The author points out that calcification is not the rule in any condition other than tuberculous foci. He believes that calcification occurs in primary lesions of intestinal tuberculosis. He carried out routine examinations of the gastro-intestinal tract in five cases with special reference to intestinal tuberculosis and in all cases the Roentgen signs of the disease were present. He differentiates between calcified



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areas and glands and those shadows produced by injections of bismuth and mercury compounds. He concludes that clinical history will prevent such suspicious shadows from being confused with those due to tuberculosis.

McINTOSH, H. C: Changes in the Lungs and Pleura Following Roentgen Treatment of Cancer of the Breast by the Prolonged Fractional Method. *Radiology*, 1934. 23:558.

McIntosh reports four cases showing different degrees of pleuropulmonitis. He suggests that there is a possible influence of age and arteriosclerosis on the abnormal pleural and pulmonary changes. He suggests that morbidity and possible mortality in cases of cancer of the breast, as well as intrathoracic malignancies, may be due to pleuropulmonitis following Roentgen treatment.

The author points out the difficulty of differentiating between irradiation changes and advancing metastases, especially in cases in which more treatment for palliation of the metastases is contemplated. He points out in all cases reported hereafter the possible influence of age and possibly arteriosclerosis are to be considered.

WALLGREN, A: The Value of Calmette Vaccination in the Prevention of Tuberculosis in Childhood. *J. Am. M. Asso.*, 1934. 103: 1341.

With regard to the safety of such vaccination, the author quotes that a study of all available material found up to the present time, not one of the million children who have been vaccinated has suffered any evident harm from a carefully prepared and carefully employed vaccine. The author himself has vaccinated 230 children; of these only two have died. One had epidemic meningitis and the other acute pneumonia. Autopsy in each case showed no evidence of tuberculosis. He concludes that the curve of the mortality rate constitutes definite proof that the principles he has followed have been efficacious in the purely practical application of antituberculosis vaccine as a prophylactic measure against tuberculosis in the children of a community.

Wallgren cites that in three five-year periods immediately preceding 1927, when he began his study, the number of deaths from tuberculosis per 1,000 children was 4.3, 4.2 and 3.4 respectively, while in 1933 the first year of the next five-year period it was only 0.3.

BETHEA, OSCAR W: The Treatment of Pulmonary Abscess. *Internal Medical Digest*: Vol. 26, No. 2, Page 114. Feb. 1935.

Bethea divides the treatment of pulmonary abscess as follows:

- (1) Prophylaxis.
- (2) Expectant treatment including general care, medication, postural drainage and bronchoscopic examinations.
- (3) Surgery including many and various procedures.

In discussing *prophylaxis* the author stresses pre-operative treatment to the mouth and tonsils. This is very important because a study of 415 cases of post-operative pulmonary abscesses showed that over 61% of this group followed tonsillectomy; 25% developed from pneumonia and 10% from aspiration of a foreign body.

He further discusses the fact that the Vincent group of organisms are present in the mouth in a fairly large percentage of cases prior to operation. Obviously the Vincent group, as well as any other organism, when found present, should be taken care of prior to operation.

Under *expectant* treatment he believes that "operation should be reserved for such cases as are definitely becoming worse; failure to improve in early stages is not necessarily an indication for surgical drainage. If the condition should be stationary after efficient treatment, for a period of at least two months, then further measures should be considered." Rest, both mental and physical, fresh air, sunshine, body comfort and hygiene are just as important as they would be in active pulmonary tuberculosis.

Postural drainage is one of the most valuable measures and should be instituted as soon as the patient begins to cough up large amounts of characteristic mate-



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rial. He points out six different positions to be used in which the patient remains about five minutes.

- (1) Lying on the back.
- (2) On the right side.
- (3) On the abdomen.
- (4) On the left side.
- (5) Sitting up.
- (6) Knee-chest position.

The sixth position can be substituted by the patient by elevating the foot of the bed. A study of the drainage following these positions will soon indicate the position of choice for postural drainage.

On account of Vincent's being one of the predominating organisms present in lung abscesses, routine treatment of 0.3 gm. arsaphenamine should be given every four or five days, and at the same time an intra-muscular injection of sodium bismuth thioglycollate.

Bronchoscopy is growing in more favor by clinicians and it is urged that a patient be given the benefit of six or seven such treatments before surgery is considered.

Many physicians feel that when such treatment is carried out sufficiently early, surgery is seldom necessary.

Surgery is necessary in a certain percent of cases no matter what the preliminary treatment. Bethea summarizes as follows:

To give the best results medical treatment must be instituted early.

The arsaphenamines and bismuth offer much promise of benefit.

A plan for postural drainage is discussed.

An abscess cavity is rarely, if ever, filled with lipidol by the ordinary methods of instillation.

Treatment with the bronchoscope is increasing in favor.

Pre-operative treatment of the mouth and tonsils is urged and a new device offered.

Proper localization of the abscess for operative approach is discussed and a new device is presented.

JONES, ROBERT M: The Surgical Treatment of Bronchiectasis. Brit. J. Surg. 21: 257.

The author reviews briefly the literature on the treatment of bronchiectasis and arrived at the conclusion that lobectomy is the most logical treatment. It is pointed out, however, that in the past the high mortality rate following lobectomy has made the use of this operation prohibitive.

Sixteen cases of bronchiectasis treated by lobectomy using a modification of Brunns' method are reported. Of these, six patients were cured (37.5 per cent) and five died (31.2 per cent.) One other case not included in the sixteen previously mentioned was treated by the two stage method and died of broncho-pneumonia on the fifth post-operative day.

The causes of death in the five cases were: 2 patients died of broncho-pneumonia on the fifth and sixth post-operative days, respectively; one patient died of broncho-pneumonia, empyema and suppurative peri-carditis thirty-eight days after lobectomy, and in this case there was a rather extensive bronchiectasis throughout the remaining lobe which did not fill at the time of the preoperative lipidol injection. The fourth patient died after a secondary operation to close a bronchial fistula from hemorrhage from the internal mammary artery eight months after lobectomy. The fifth patient died of brain abscess fifty-two days after lobectomy.

Of the sixteen cases reported, 6 patients developed bronchial fistulas, 3 of which closed spontaneously; 1 required subsequent surgery to close it, and in 2 cases the patient died. Four of the sixteen patients developed empyemas.

The author feels that only those patients who have a unilateral bronchiectasis, who have been afebrile and free from attacks of pneumonitis for some time, should be subjected to lobectomy. After a careful study of his material he came to the conclusion that 40 per cent of his mortality was due to failure to observe these facts.

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Q. What are the daily caloric requirements of the average tuberculous patient?

A. The "overstuffing treatment" of tuberculosis has fallen into disrepute. It is now felt that the average patient weighing 150 pounds requires from 2500 to 3000 calories daily. The individual peculiarities of the patient, the stage and activity of the disease, etc., must naturally determine the type of diet. A daily diet of 75 to 100 grams of fat, 100 grams of protein and 400 to 500 grams of carbohydrates would meet the caloric requirements of the average patient.

Q. Upon what phenomenon does the tuberculin test depend?

A. The tuberculin test depends upon the allergic phenomenon brought about by a previous tuberculous infection which renders the cells sensitive to the tubercle bacilli or bacillary protein. If there has been no previous infection, there is no sensitivity, and the reaction will be negative.

Q. What is the greatest predisposing cause to tuberculous infection in childhood?

A. A tuberculous-infected environment is the greatest predisposing cause of childhood infection. Practically 100 per cent of children who spend their early years in contact with a tuberculous patient become infected.

Q. Is amyloid disease of the kidney a common tuberculous complication?

A. Amyloidosis may occur in any prolonged general infectious disease accompanied by anemia and wasting. Tuberculosis of the lungs, bones or joints, supplies the conditions most favorable to its development.

Q. Is tuberculin used as a therapeutic agent at the present time?

A. Yes, there are many specialists who use old tuberculin successfully. However, because there must be a very careful selection of cases, and, because the dosage must be carefully individualized in each case, its use should be left in the hands of physicians who have had special training or experience with it.

Q. What are the usual symptoms of intestinal tuberculosis?

A. Early symptoms are: Aversion to food, persistent nausea after meals, occasional vomiting of undigested food, indefinite pains along the large intestine, especially around the cecum, and alternating constipation and diarrhea. If these persist in a known tuberculous individual, tuberculous enteritis must be strongly suspected. Late symptoms are: a severe diarrhea of dark, foul-smelling stools containing much undigested food, marked emaciation, severe abdominal pain of colicky type, and occasionally blood in the stools.

Q. What is the incidence of tuberculosis of the intestines?

A. Autopsy findings show that from 80 to 90 per cent of the individuals dying from pulmonary tuberculosis show tuberculous ulceration of the bowels. It is probably safe to say that two-thirds of the cases reaching an advanced stage of pulmonary involvement also have an intestinal infection.

Q. What are the most important causes of lung abscess?

A. 1. Aspiration of a foreign body or of infected material from the upper respiratory tract as in abscess following tonsillectomy. 2. As a sequel of pneumonia. 3. Following lodgment of a septic embolus in the lung. 4. Secondary to a septic process in surrounding structures such as subphrenic abscess, or abscess of the liver—by direct extension. 5. Traumatic injury to the chest—especially penetrating wounds. 6. Secondary to amebic abscess of the liver by way of the hepatic vein and pulmonary artery.

Q. Is hemoptysis always considered of tuberculous origin?

A. Hemoptysis occurring in the absence of any obvious cause should be considered a symptom of tuberculosis until proved of other origin. It may occur in cancer of the lung or in nontuberculous infections such as lung abscess, bronchiectasis, influenza, etc. Occasionally rupture of an aortic aneurysm into the air passages may be the cause. It is frequent in passive congestion of the lungs particularly in mitral stenosis. Rarely frank pulmonary hemorrhage occurs in pneumonia. Hemorrhagic diseases such as hemophilia or purpura hemorrhagica also must be borne in mind.

Q. What are marginal rales and are they diagnostic of pulmonary tuberculosis?

A. Marginal rales are those heard at the extreme base of the lung and nowhere else and are not diagnostic of pulmonary tuberculosis.

Q. What are the physical findings in bronchiectasis?

A. There are no definite diagnostic physical findings. The diagnosis is made by x-ray, lipidol injections and the characteristic sputum, that is to say, sputum of the "mouthful type" which separates into three layers on standing.

Q. What are atelectic rales?

A. These rales are heard at the apex, sometimes during the first inspiration which follows a deeper cough than usual. Second or third cough will clear them away entirely; they are not diagnostic of any lung pathology.

Q. Are all rectal fistulae tuberculous?

A. No. They are not invariably tuberculous. However, a rectal fistula occurring in a patient should warn the physician to make a thorough examination of the patient's chest and to obtain careful personal history.

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